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JANUARY, 1928

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CHARLES ROBERT OSTEN SACKEN,
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CONTENTS

Baerg—Some Studies of a Trapdoor Spider (Araneae: Avicul[illegible]idae) . . .
Knaus—Coleoptera as Guests of other Insects and Animals . . . .
Fulton—The Habitat of Tropidischia xanthostoma, (Orthop.: Tettigoniidae) 8
Knull—Two New Cerambycidae (Coleop.). 11
Miller—A Case of the Botfly (Bogeria buccata) as a Parasite upon the Common House Mouse (Mus musculus) (Dipt.: Oestridae). . 13
Barber—Thomas Say's Unrecorded Journey in Mexico. 15
Editorial—The Labeling of Plates 21
Personals 22
Cockerell—Impressions of the Tring Museum, England. 22
Gold Mines of the Naturalist in Nicaragua. 22
C. W. J.—The Clark Collection of Lepidoptera 23
Sherman—Assembly of Ground-Beetles (Coleop.: Carabidae) 24
Entomological Literature 25
Review—Kingsbury and Johannsen's Histological Technique 31
Obituary—Frederick Leonard Washburn 32
Obituary—Antonio Berlese. 32

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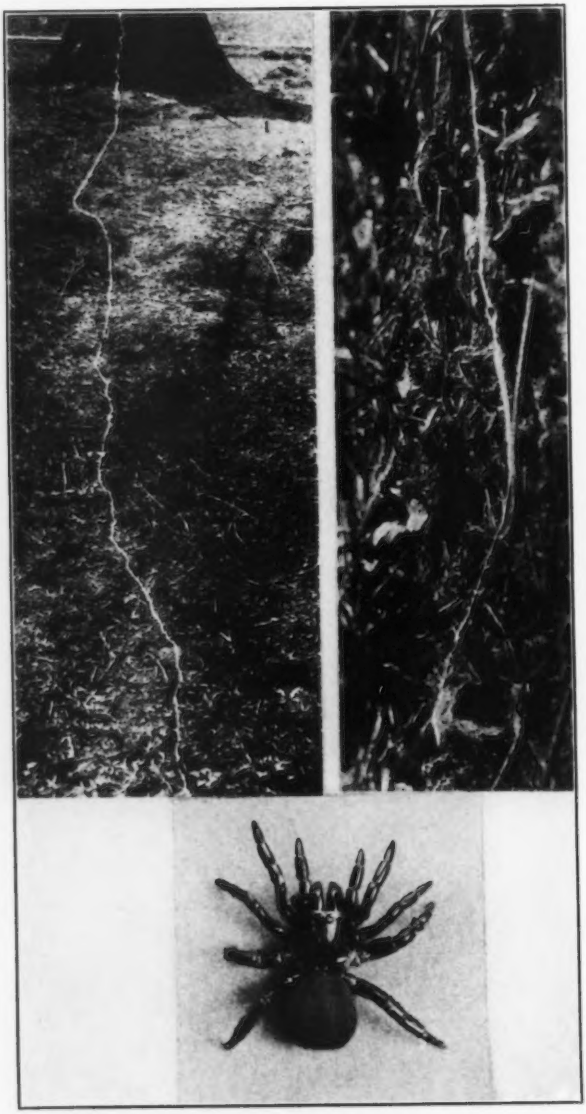


TRAPDOOR SPIDER, PACHYLOMERUS CARABIVORUS.—BAERG.

ENTOMOLOGICAL NEWS

VOL. XXXIX JANUARY, 1928 No.1

Some Studies of a Trapdoor Spider.† (Araneae: Avicularíidae).

Plate I.

By W. J. BAERG, University of Arkansas, Fayetteville, Ark.

The trapdoor spider, *Pachylomerus carabivorus* Atk.*, was described by George F. Atkinson, in 1886[1]. He made a very careful study[2] of the building of the nest, and especially of the trapdoor. In addition, he made some observations on the feeding habits of the trapdoor spider. Although this species has so far been recorded only from North Carolina and District of Columbia, it is probably quite common all through the southern states. In and near Fayetteville, Arkansas, it is found in considerable numbers. The studies that I have made deal mainly with the ballooning habit of the young and with the effect of the poison and habits of defense of the adult spiders.

For about a week in March (from about the 15th to the 22nd) one can find on the university campus, as well as elsewhere in the neighborhood, numerous silken bands which are the trails laid down by the young trapdoor spiders. These silken bands, about two mm. in width, are most easily seen on the bark of trees. From the base of the tree the trail can usually be traced to the nest of the mother. On the ground the bands are not so regular as on the trees, having a tendency to become so thin in places that they are difficult to trace. As a rule, the silken band at its origin is fastened to the trap door of the mother's domicile.

During the spring of 1927, and the one preceding, about thirty of these trails were observed. They varied in length on the ground from ten feet to sixty-eight feet, with an average of about twenty feet. The general direction is almost always

†Research Paper No. 56, Journal Series, University of Arkansas.

*Determined by Alexander Petrunkevitch, Yale University, New Haven, Connecticut.

a straight line to the nearest tree of considerable size. A tree less than six inches in diameter is usually ignored, even if it is much nearer than some larger tree. No evidence could be found indicating that the spiders prefer going in any one direction.

On the trees the trail leads fairly straight up to a height depending, it seems, largely on the velocity of the wind at the time when the spiderlings are travelling. Six trails examined for this feature led to heights varying from thirteen to thirty feet. One trail made on a very windy day faded out at a height of thirteen feet from the ground. As a rule the trail ends on a lateral limb.

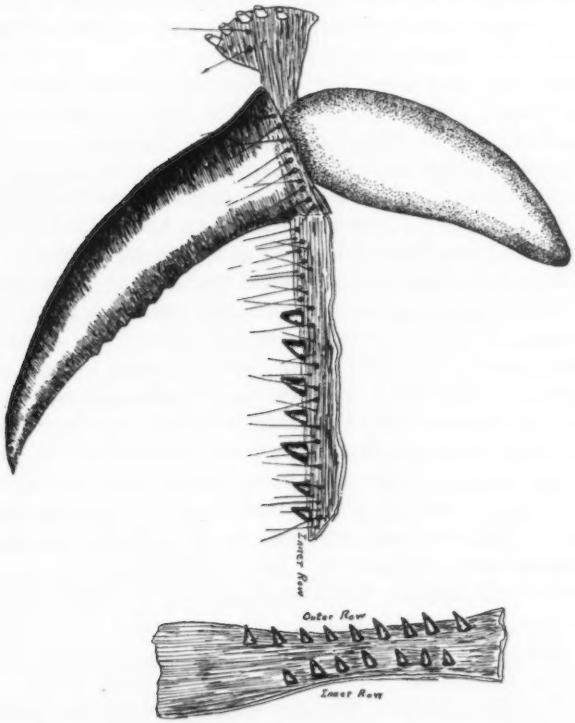
When setting out on the aeronautic expedition, the young spiders, varying in number from eighty to one hundred and five, according to a few counts, leave their maternal home between nine o'clock and ten o'clock A. M., travelling single file, in greater or smaller squads, so that the whole family is spread out over a distance of four to six feet. Limited observations indicate that they go at a rate of about twenty inches in ten minutes, and as a rule reach the desired height between twelve and one o'clock P. M. Having reached this height, the young spiders spread out over a distance of about three feet and each one proceeds to spin out a thread of silk, which when having sufficient buoyancy carries the spiders off and out into the world. I have not actually seen the spiders being wafted away, but the conclusion seems obvious.

In only one observed instance have the young spiders selected a building in order to reach a higher altitude. The nest was located near one of the university buildings, and on leaving the nest the spiders took a direct course toward a narrow part of the stone foundation between two windows. Arriving here they were apparently disappointed and took a course parallel to the wall of the building. After going a short distance they came to the wall of a projecting part, which must have added to already considerable confusion, so that instead of going to a tree quite near by here, they went up on the side of the building to a height of about eighteen feet, whence they sailed.

An adult female trapdoor spider when first disturbed or

annoyed appears very pugnacious. A cockroach held within reach of the spider is promptly seized with the fangs and held for several minutes. On being released the cockroach runs off as if uninjured.

A young white rat (about six months old) was bitten five



Upper figure —Fang and gland of adult female trapdoor spider.
Lower figure —Teeth along the sides of the furrow of the chelicera

or six times. The spider had no difficulty in penetrating the skin on the inside of the hind leg. While the punctures were clearly visible, there was no trace of any liquid having come from the fangs. The rat showed no symptoms other than squealing just when it was bitten.

In view of the fact that the spider has well developed glands above the fangs, but apparently did not inject any poison when biting, it seemed desirable to make an injection of the contents of the glands. Since the glands are not readily taken out, the entire chelicerae were removd and ground up in one c.c. of distilled water. This extract, like that made of the glands from the locally common tarantula (*Eurypelma californica* Ausserer), has a decided tendency to form froth. As in the previous test, the extract when injected into the hind leg of a young white rat produced no noticeable effect. The rat did not even lift the leg immediately after the injection.

When trying the bite of the trapdoor spider on myself, I allowed the fangs to be inserted on the inside of the third finger and remain for about a minute and a half. Aside from the two small punctures there were no appreciable effects.

While making these poison tests, I learned with some surprise that the pugnacity which the spider presents when it is first disturbed is of very short duration. The spider rapidly becomes more and more sullen, so that if it is not induced to bite at once, it will refuse to do so. In this sullen attitude, the spider soon becomes limp and behaves as if it were about to expire from too rough handling. When put back in the jar containing its nest, it soon regains the former vigor and when disturbed again will appear prepared to fight. Whether this assumed debility has been developed in an attempt to deceive a predatory wasp, or whether it is a resignation of the inexorable fate as Fabre[3] has suggested, I am not prepared to say.

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1. Atkinson, George F., 1886, Entomologica Americana, Vol. II, p. 133.
2. Id., 1886,. A new trapdoor spider. Amer. Nat., Vol. 20, p. 583-593.
3. Fabre, J. H. Life and love of an insect, p. 168.

Explanation of Plate I.

Upper left: Trail leading over the ground and up a tree.
Upper right: Trail, or silken band, attached to trap door.
Lower: Adult female trapdoor spider.

Coleoptera as Guests of other Insects and Animals.*

By W. KNAUS, McPherson, Kansas.

A worth-while but only occasionally worked field for energetic collectors of Coleoptera, is to be found in a careful examination of the homes and burrows of other insect orders, and in the nests and burrows of animals. Herewith are a number of examples illustrating the truth of the above statement.

Hymenoptera, especially ants and wild bees have as their guests and parasites, various genera and species of Coleoptera. The solitary wild bee, *Anthophora occidentalis* Cresson has as a parasite in Central Kansas, and extending west and southwest into the States of Colorado, Oklahoma, Texas and New Mexico, that abnormal larva-like Sitarinid, *Leonidia neomexicana* Cockerell. The minute but very active larva of the *Leonidia* fastens itself to a hair on the leg of the bee and is carried into the burrow and the cell, where it remains, and feeds on the food stored for the bee larva, transforms into a pupa and emerges as an imago a week or ten days before the unparasitized bee pupa emerges as an imago and begins to construct and store her cell for the brood of next year; and so the process continues until the bee colony is almost or quite exterminated. Colonies of *Anthophora* and *Leonidia* have been examined in McPherson, Ellsworth and Kiowa Counties, Kansas, and they can be found in many of the Western and Southwestern counties of the state. A similar parasite, *Hornia minutipennis* Riley, is an unwelcome guest of a wild bee in Missouri. Another parasitic species is *Tricrania sanguinipennis* Say in Massachusetts, and still another Sitarinid is *Tricraniodes stansburyi* Hald. in Utah. The larvae of other genera of Meloidae are also parasitic on grasshoppers.

Many species of Staphylinidae are welcome guests of ants. A notable example coming under my observation was one of the numerous genera and species of the Myrmedoniini, a Myrmicophilous tribe of the Staphylinidae. A sudden rise in June, 1922, in a small stream in the eastern edge of McPherson,

*Presented at the meeting of the Kansas Academy of Science, April 15, 1927.

due to a heavy rain caused an overflow on a small piece of low ground, and Professor H. H. Nininger, of McPherson College, while walking along the edge of the overflow saw a colony of small black ants being drowned out of their home. He gathered the drowning colony in his handkerchief, and took them to his office. While sorting them over he noticed a few very small Staphylinids with the ants. These he turned over to me, and I sent them to Professor W. M. Mann of the Division of Entomology, U. S. National Museum, Washington, D. C., who pronounced them to be *Ecitonidia wheeleri* Wasmann, and the ants to be *Eciton schmitti* Emery. The McPherson specimens of *Ecitonidia* were the third to be reported to the Department. The type locality was Austin, Texas. *Ecitonidia wheeleri* closely mimics in appearance its *Eciton* host.

Many species of Pselaphidae are also guests of ants. One species of ants so far as I have observed entertains only one species of Pselaphid guests. *Fustiger knausi* Sch. was taken by the writer in 1904-05 in the nests of *Lasius americanus,* in the Sacramento mountains of New Mexico, at Cloudcroft, at an elevation of 9,000 feet, in June. Another Pselaphid taken at Cloudcroft was *Euplectus acomana* Csy. These were found in the burrows of Scolytids, under the decaying bark of dead spruce logs and stumps.

A tribe of the Scarabaeidae, Cremastocheiliini, has many species as the guests of ants. Those coming under my notice were *Trinodia setosifrons* Csy., Western Kansas, on the mounds of the mound-building prairie ants, and *C. quadricollis* Csy., a specimen of which was taken early in April, 1902, near Waco, Texas, also on a mound of the mound-building ant.

Coprophagous Scarabaeidae frequent the burrows and nests of various animals, and the nests even of the larger birds. The insect guests of the Florida Land Tortoise were collected and described by H. G. Hubbard in 1893. Some of the Coleoptera taken from the burrows of the Tortoise were *Copris gopheri, Onthophagus polyphemi, Aphodius troglodytes,* and a species of Staphylinid, *Philonthus gopheri;* also a species of Histerid, *Chelyoxenus xerobatis.*

The burrows and nests of the Prairie Dog should yield a number of genera and many new species of Coleoptera to the collector who will expend the energy necessary to excavate the burrows and homes of this little rodent. So far I know of but little actual work having been done in Kansas, to discover the Coleopterous guests of this widely distributed animal. Last June, Professor W. J. Brown of the A. & M. College at Stillwater, Oklahoma, visited the Miller Bros. 101 Ranch in Noble County, and using a small hand trowel removed the soil an inch in depth from the bottom of several burrows as far as he could reach. From the dirt so removed he collected a number of new species of Coleoptera, among them being a fine large *Onthophagus,* two *Aphodius* and one or more Staphylinidae. With such results obtained by a few hours' work in Oklahoma, southwest Kansas Dog towns should prove an attractive field for work with satisfactory returns in undescribed new species. Not only do the Prairie Dog burrows hold promise of rich returns in new species, but the burrows and dens of other and larger animals undoubtedly shelter many insect guests.

Even the birds should not be forgotten when looking for new or rare Coleoptera. Professor R. H. Beamer, of the University of Kansas, found that handsome Chrysomelid, *Griburius montezuma* (Suffr.) mating in buzzards' nests in Kiowa and Ellsworth counties, Kansas, the first half of July, 1923, and collected and observed the transformation of the pupae into the imagos the following June and July. This species is a leaf eater as a perfect insect but its larvae are coprophagous. I have in my collection a species of *Trox* taken from a crow's nest near Ottawa, Kansas, by Howard K. Gloyd, of Ottawa University.

The successful collector of insects and especially of Coleoptera should leave "no stone unturned", no vegetation unsearched, no burrow uninspected, if he desires to add to his collection the new and rare species, and to himself and others some modicum of knowledge of the life and habits of the insect world; some of it so intricate and wonderful, that it seems to have passed the border line of instinct into the realm of reason.

The Habitat of Tropidischia xanthostoma, Scudder (Orthop.: Tettigoniidae).

By B. B. FULTON, Iowa State College, Ames, Iowa.

Of all the species of western Orthoptera which I hoped to add to my collection, while at Corvallis, Oregon, the unique *Tropidischia xanthostoma* Scudder, proved to be the most elusive. The meager records concerning the few specimens housed in museums and the locality labels with three specimens in the Oregon Agricultural College collection informed me that it inhabited forested country, but that was all. I wanted it because it is rare and because it stands in a group by itself, but more than that I wanted to find out how such an extraordinary insect with such attenuated appendages lived. From its appearance I expected it to have habits similar to other cave and camel crickets of the Rhaphidophorinae. There were no caves, but loose bark and hollow trees were plenty. I rolled over old logs by the scores and hacked at loose bark until I felt ashamed for disfiguring the forests—still no *Tropidischia*. Smaller Rhaphidophorinae I found in animal burrows and under stones and logs, but not in the fir forest where *Tropidischia* had been caught. I had almost come to the conclusion that it must inhabit the tops of these loftiest of trees and supposed that the occasional specimens taken were some that had fallen down. I was contemplating the difficulties of looking for it in such places when my search came to an unexpected end.

The Biological Club of the College was holding its annual spring field trip in a delightful valley in the coast mountains, where the old government military trail crosses the headwaters of the Yaquina River by an ancient log bridge. We were just breaking our camp in the premature dusk of the deep fir forest when Professor H. M. Wight, zoologist, approached me with something in his hand. When I saw two thread-like antennae protruding between thumb and finger I knew that the thing I wanted had been found. It had been caught at the edge of the log bridge. I had never thought of looking under bridges for them, but now it seemed a most likely place.

Armed with a flash light and killing bottles we descended onto the slippery, mossy rocks under the bridge and looked back into the almost totally dark spaces between the great supporting logs where they joined the bank. The first flash of light revealed several of the shadowy creatures back beyond reach, suspended by their fantastically long legs to the underside of the floor logs. Then we began to see other large ones and innumerable little fellows. Here were more specimens of this insect than the museums of the world contained. They stood motionless except for their wig-wagging antennae. Some of them started moving toward the inaccessible recesses so we began to catch those within reach.

They were not difficult to catch for they did not attempt to jump unless the hand touched their antennae. They could run rapidly and those that started for the far corners soon escaped. We filled several killing bottles with the larger ones which I thought at the time were adults, but which proved to be in the last nymphal instar.

On the following day, May 25, 1924, I went out to examine bridges over small mountain streams near Corvallis. *Tropidischia* was found under a low log bridge in the fir forest and under a plank bridge with steel girders in a place which was formerly forested but now a quarter-mile removed from the nearest patch of woods. One adult was captured under the last. Bridges over the same streams but located in the open valley plain and surrounded by prairie or oak woods did not harbor the insects, even though some had ideal dark retreats under them.

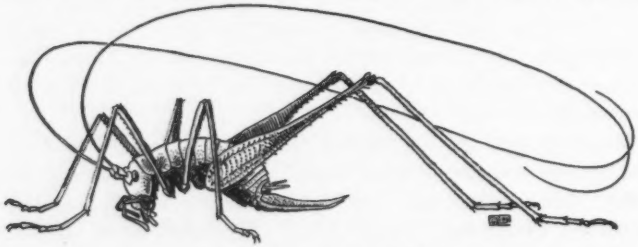
Since bridges are not natural features I attempted to find the species beneath undercut banks, under fallen trees and in other dark retreats near the water, but the search revealed nothing. Other log bridges in the fir forest were visited. Every one which had almost totally dark spaces under it contained a colony of these shadowy crickets, always standing about in groups, apparently with nothing to do.

I left Oregon two weeks after finding the species so my observations on it are limited, but during the last week I took

time to make a night visit to one of the bridges where I had found it before. As I suspected the insects were night prowlers. A number of the large nymphs were wandering about the water's edge. Another was standing by a small mushroom that had a chewed place in the edge—circumstantial evidence which I did not have time to verify. The light from the pocket flash sent most of the insects running up the bank to their cave so I did not learn much concerning their food habits. If they feed on fungi they are well supplied from the hanging gardens under the log bridges. My guess is that they are as omnivorous as many other darkness-loving Rhaphidophorinae.

I collected two adult specimens before leaving Oregon and have received a few others from H. M. Wight and T. M. Thompson. The adult stage is more common in the middle of the summer. The college collection contained adults taken in August and September and a half grown nymph taken in November. The prevalence of both very small and very large nymphs at one time indicates that there are probably two rather distinct broods but nothing is known about the length of the life cycle.

The living insects have a dark, rich, chocolate-colored body with a velvety appearance. The legs and head are a lighter,



Tropidischia xanthostoma Scudder.

almost purplish brown; the tips of the tibiae and tarsi of the fore and middle legs are pale, somewhat flesh-colored. The antennae have pale annulations. The clypeus and mouth parts are dull yellowish; palpi pale flesh color with brownish tinged areas. The most unique feature about the insect is the shape

of the tibiae which are perfectly square in cross section and each of the four corners is finely serrated with short spines.

The antennae of an adult male measured 120 mm. in length. The hind femora of the same were 30 mm. long and the tibiae 37 mm. It would be possible for this insect to extend itself to a length of eight inches from tips of the antennae to the hind tarsal claws, while the body itself even in the living insect would measure only about 20 mm. The smallest nymphs found had bodies 6 mm. long; hind femur 8.5 mm.; hind tibiae 11 mm., and antennae 40 mm.

The species was described by Scudder[1] from one male taken under a large stone at Crescent City, California. In a later publication Scudder[2] also records specimens from Mendocino, California, and Philomath, Oregon. Specimens listed by Caudell[3] extend the known range from Los Angeles, California, to British Columbia. Oregon specimens that I have examined besides those collected by myself are from Mary's Peak and Philomath in the Coast Range, Bohemia and Cascadia in the western part of the Cascades, and Waldport on the coast. All other localities mentioned above and all specific localities listed by Caudell are on the coast.

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[2]Scudder, S. H. Canad. Ent. 31:117, 1899.
[3]Caudell, A. N. Proc. U. S. Nat Mus. 49:657, 1916.

Two New Cerambycidae (Coleop.).

By J. N. KNULL, Pennsylvania Bureau of Plant Industry, Harrisburg, Pa.

Elaphidion (Anoplium) masoni n. sp.

Brunneus above and below, rather robust, head with coarsely granulate prominent eyes, surface with irregular large punctures, crenulate on vertex, moderately pubescent, antennae when laid back over dorsal surface, reaching to apical fourth of elytra in female, first joint stout, second small cylindrical, third not quite as long as fourth and fifth taken together, fourth to ninth inclusive of about equal length, tenth shorter than ninth, eleventh longer than tenth, third to tenth joint

inclusive carinate, antennae densely pubescent. Thorax wider than long, widest in middle, surface irregularly coarsely punctured, punctures more numerous laterally, a central area smooth, dorsal surface moderately pubescent. Scutellum triangular, with numerous punctures. Elytra wider than widest portion of thorax, sides parallel, apices rounded, surface irregularly coarsely punctured, punctures becoming light toward apex, each puncture containing a long silky hair. Abdomen with ventral surface somewhat smooth, lightly punctured, pubescence sparse, last ventral segment broadly rounded. Length 10 mm., width 3 mm.

Type: ♀, labeled Edgebrook, Illinois, June 18, in the collection of the author. *paratype*: ♀, labeled Edgebrook, Illinois, Aug. 5, E. Liljeblad collector, in the collection of the late Mr. F. R. Mason after whom the species is named. The author is indebted to Prof. H. C. Fall, who kindly compared the specimen with the material in his collection.

Oberea delongi n. sp.

Piceous above and below with exception of head, ventral portion of thorax, scutellum, last abdominal segment, humeral angles of elytra and legs, which are yellow. Head with dark area on each ocular region, and at apices of mandibles, front convex, a median line extending from thorax to labrum, irregularly finely punctate in front, coarse punctures on vertex intermixed with much finer punctures, surface densely pubescent, antennae when laid back over dorsal surface, extending beyond middle of elytra in female, slightly longer in male, scape stout, second joint small, third longer than fourth, fifth shorter than fourth, sixth to ninth inclusive of about equal length, tenth shorter than ninth, eleventh shorter than tenth.

Thorax cylindrical, widest in middle, constricted anteriorly and posteriorly, smooth callosity in center, one on each side of central area and a lateral one on each side near base, surface irregularly coarsely punctured, short appressed pubescence intermixed with long hairs. Scutellum triangular, densely finely punctured and pubescent. Elytra wider than thorax at base, sides nearly parallel, dilate on apical fourth, apices truncate, sutural costa raised on each elytron, surface coursely irregularly punctured, lightly clothed with appressed pubescence, a long hair arising from each puncture.

Abdomen with ventral surface covered with minute punctures which give a somewhat granulate appearance, a closely appressed hair arising from each of these small punctures, larger

punctures irregularly placed each containing a longer hair, last ventral segment of female concave, strongly emarginate at tip, a median line through center, dorsal segment slightly emarginate, tumid.

Type: ♀, length 10.5 mm, width 2.5 mm. The *allotype* ♂ has the last ventral segment much more concave with tip slightly emarginate, the last dorsal segment nearly truncate and slightly convex. The last abdominal segment, scutellum and vertex of head are piceous. The color varies with the sex in the specimens at hand.

Type, allotype and two *paratypes* collected at Cedar Point, Ohio, on June 21, 1917, by Dr. D. M. DeLong, who kindly presented the series to the author. *Paratype* collected at Zanesville, Ohio, on June 25, 1924, by Dr. A. E. Miller, who kindly loaned me the specimen. I am indebted to Mr. W. S. Fisher of the U. S. National Museum for comparing the species with the Casey types and the material in the National Museum.

A Case of the Botfly (Bogeria buccata) as a Parasite upon the Common House Mouse (Mus musculus). (Dipt.: Oestridae).

By D. F. Miller, Ohio State University, Columbus, Ohio.

While many kinds of mammals and even birds and reptiles are sometimes hosts to the Oestridae, certain types of hosts are rare and are worthy of mention when found. Because of their small size and habits of remaining concealed during the daytime mice are not likely to be parasitized by botflies and instances of its occurrence are seldom met with in the literature upon the subject.

Brauer (1864) tells of a bot larva found by Professor Hering upon a field mouse, *Avicola arvalis* Pallas. C. O. Waterhouse (1881) had on display at the meeting of the Entomological Society of London three larvae of an *Oestrus* obtained from *Mus musculus* and sent to him from Peru. Riley and Howard (1893) mention two "warbles" sent to them from California where they had been obtained from a parasite mouse *Sitomys californicus* which had been trapped on the upper Temecula River. They recognize the larvae as *Cuterebra* but of unknown species.

Having reared large numbers of botflies from the larvae it seems to me that the common idea that they are difficult to rear is a mistake and it is to be greatly hoped that those who find them hereafter will either rear them or send them to someone who is interested in so doing. Many of the references in the literature are to very doubtfully classified specimens based upon the larva alone.

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Thomas Say's Unrecorded Journey in Mexico.

By H. S. BARBER, Bureau of Entomology, Washington, D. C.

When definite type localities are not recorded for species described long ago, it is of the utmost importance that the modern systematist understand what geographical sources could have contributed material to the describer up to the time of his study. But it often requires a long and tedious search through the records of a pioneer naturalist such as Thomas Say before any clear idea can be formed of the areas from which collections were available at different times in the progress of his studies. If we should now attempt to identify the weevil, *Lymantes scrobicollis* Schoenherr 1837, a species long considered unrecognizable, whose type locality is recorded as "America borealis. A Dom. Say amice communicatus," it would be of importance to know if the faunae of Mexico City and Vera Cruz need to be considered in addition to the better known collecting grounds of the sender. The numerous species described by Say without more definite locality than the laconic "Inhabits Mexico" have been a source of perplexity to modern workers, some of whom have interpreted this locality as New Mexico, but, as is shown below, there is ample evidence that Say actually visited Mexico City. It is probable that all of his Mexican forms were collected along the old road between Vera Cruz, Jalapa, Mexico City and Tacuba.

While moving a pile of lumber in an old building on his farm near Mantua, Ohio, Mr. D. B. Husted found a common house mouse infested with a bot. In regard to his discovery he writes as follows:—"the mouse was found among a pile of boards in an old building. It was just barely dead, I think, when I picked it up. I thought it had got pinched in moving the boards and as I walked to the door and threw it out, I saw, as it went, the button on its groin, I recovered it and mailed it the same day."

The specimens were received by Professor R. C. Osburn, of Ohio State University, and turned over to me for rearing. The mouse was thoroughly emasculated by the bot larva which had left the dead mouse but was itself still alive, active and mature. There was no indication of its having attacked any other part of the mouse. I placed it upon a pot of earth which was covered with a breeding cage and left upon a shelf before my window. The larva buried itself immediately. This was September 30, 1926. Pupation must have followed very soon afterward.

During the fall and winter months which followed it remained undisturbed upon the window shelf which was directly over a steam radiator. This probably kept the temperature slightly above that of the room most of the time. About the only attention it received was a little water at irregular intervals, sometimes twice in a week, sometimes once in two weeks. On March 4, 1927, a well formed male fly emerged. The fly *Bogeria buccata,* (also called *Cuterebra*), and the mouse *Mus musculus* are in the possession of Mr. James S. Hine of the Ohio State Archaeological Museum to whom I am indebted for the identification.

The finding of the above case brings a letter from D. R. Beardsley, of Geneva, Ohio, to the effect that he—"found a mouse with a 'warble' in its flank well back between its legs on the left side. I think it was quite well matured. It was a small house or barn mouse. It was in the latter part of October." He also states that the larva was of a brownish color. Unfortunately, Mr. Beardsley did not rear his specimen or preserve either the larva or the mouse.

In 1829, Say described numerous flies, and in 1831 numerous weevils from Mexico without definite locality. In another paper, published in December, 1831, he several times names Mexican species from specimens collected by William Bennett and presented to him by Mr. Maclure, and among these he describes *Corixa mercenaria,* with comparisons and remarks, in the first person, as follows, indicating that Say had, himself, been in Mexico City:

Passing through the market in the city of Mexico I obtained a few specimens from the quantity of at least a peck, exposed for sale by an Aztec woman. They are made use of as food.

Commenting on a rove-beetle (*Oxytelus rugulosus*) described by him in 1834, he says: "I obtained three specimens of the *rugulosus* in Mexico."

Again, in a posthumous paper published in 1837, in describing two species of stingless bees from Mexico, he says of one:

My specimens are workers, and I did not find the nest or ascertain the kind and importance of the honey they make.

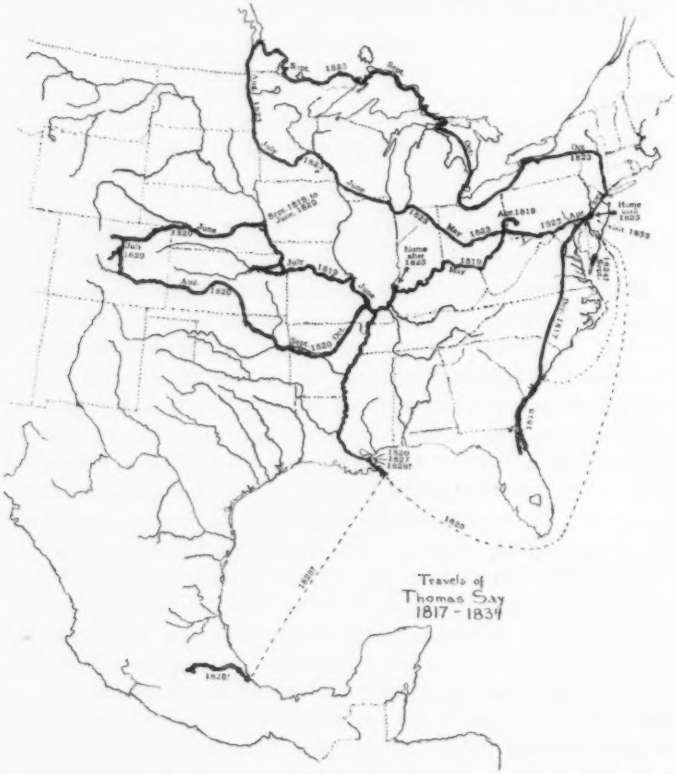
Of the other he says: "Of this I obtained but a single specimen—."

But even more convincing is his account of the honey-storing, papernest making wasp which he describes as *Polistes mellifica,* in which he says:

Not being able to find my notes relative to this species, I can only state, that near Jalapa, my attention was attracted by a group of Indians, who were eating honey from a paper nest which was then so far dissected in their repast that I could not ascertain its proper form. The honey had a pleasant taste, and as far as I could gather from their gestures, the nest was obtained in a tree. Some of the specimens above described I found crawling feebly away and others I extracted from the cells in a perfect state. [He then continues, still writing in the first person, with lengthy technical remarks.]

On referring to his papers on Conchology a number of more convincing remarks are to be found, a few of which may be quoted here:

Personal experience with the honey-storing, papernest wasp, *Nectarina mellifica* (Say) (see Proc. Ent. Soc. Wash., vol. 7, 1905, p. 25), led the writer to read Say's account of this species (below quoted), so it was quite a surprise to find later that no mention of his journey to Mexico appears in the biographies of this fine old naturalist. The "trail map" here shown is



drawn chiefly from the maps of the two expeditions of Major Long in which Say participated, but much additional information has been taken from certain remarks appended to descriptions of species.

Inhabits Mexico. I obtained several specimens in a ditch beside the road between the capital and Tacuba.

Occurs in plenty a short distance below Vera Cruz. We found them immediately behind the sand hillocks of the coast . . . . did not see a living specimen.

We collected many . . . in the marshes near New Orleans and on the banks of the Carondelet Canal.

I obtained a few single valves . . . . at New Orleans during a short sojourn in that city with Mr. Maclure in 1827.

Discussing artifacts from the prehistoric mounds (Disseminator for June 23, 1831—not seen by present writer*) Say says a certain

—implement which probably served as a knife—resembles the obsidian knives of the ancient Aztecks, or perhaps of the Tultecks, of which we found a great many near the Mexican city of Chalco—

and the Prince of Wied, who had visited Say at New Harmony and from whose book (Travels in the Interior of North America, english translation, 1843, p. 80.) the last quotation has been taken, further discusses these

Instruments . . . . found even now in Mexico, some of which Mr. T. Say brought with him from his journey to that country, and wrote a paper respecting them.

In Lockwood's narrative of the New Harmony Movement (Appleton, 1905) the presence of Say and Maclure at New Harmony in 1827 is mentioned as well as the latter's departure for Mexico in 1828 leaving Say in charge of his interests in New Harmony.

Through the kindness of Mr. Wade his as yet unpublished bibliography of Thomas Say in "Bibliography of Biographies of Entomologists" has been available to me, but no mention of Say's Mexican journey has been noticed in the articles cited. An outline of his journey to Florida appears in two letters dated Washington, Dec. 12, 1817, and Philadelphia, June 10, 1818 (Ent. News 1901, vol. 12, p. 233-236) mentioning his

*Mr. B. E. Montgomery has looked up this publication in the library at New Harmony and finds this article is anonymous and that the date is June 25, 1831, instead of June 23. The Prince of Wied may have had knowledge that it was written by Say.

journey with Maclure in carriage from Philadelphia via Washington to Charleston, S. C., where they shipped to Savannah and, joining Ord and Peale, proceeded slowly by sloop to St. John's River. The two-year trip with Long to the Rockies is briefly narrated by Say in another letter dated at Philadelphia, Aug. 29, 1821, (see Ent. News 1901, vol. 12, p. 314-6), and the six-month journey to Lake Winnipeg with Long is outlined in another letter from Philadelphia dated Nov. 30, 1823, (see Ent. News 1902, vol. 13, p. 39-40). Perhaps further evidence of his journeys to New Orleans and Mexico, or elsewhere, can be contributed by some one who knows of unpublished letters from New Harmony. After a rather careful search through the numerous but fragmentary accounts of this very impressive character, the opinion voiced by Dr. Dall almost forty years ago in the footnote to his appreciative account (Proc. Biol. Soc. Wash. 1888, vol. 4, p. 101) may well be quoted: "A better biography of Say is greatly needed."

Postscript, November, 1927.

Since writing the above, two very important published statements of such definite nature as to almost demand deletion of the word "unrecorded" from the title of this article, have been found and the writer is greatly indebted to Miss Hazel Bartlett of the Library of Congress, Washington, and to Mr. Wm. J. Fox, of the Academy of Natural Sciences, Philadelphia, for the references.

S. G. Morton, in his Memoir of William Maclure, read in 1841 and published in Philadelphia (2nd edition, 1844, p. 21) wrote:

> We accordingly find him [Maclure] in the autumn of 1827 embarking for Mexico in company with his friend Mr. Say. They passed the winter in that delightful country . . . . and on the approach of summer they returned to the United States.

E. J. Nolan, in his account of the Philadelphia Academy of Natural Sciences (Founders Week Memorial Volume, Philadelphia, 1909, p. 156) states:

> The communistic experiment in which they were engaged having proved a failure he [Say] accompanied Mr. Maclure

to Mexico. He remained there for twelve months and was then compelled by business engagements to return to New Harmony.

The source of information of either of these statements is not known.

From a work of fiction (Seth Way, A Romance of the New Harmony Colony, by Caroline Dale Owen—Houghton Mifflin Co., 1917) one may better comprehend than from historical memoirs, the characters, ideals and inspirations which found their expression in the New Harmony undertakings. "In character and scientific attainments the hero is Thomas Say" but in the story he (Seth Way) appears to be a wandering lad working at New Harmony before the arrival of Say who is thereafter rarely mentioned.

"The Communism of Thomas Say" is the subject of a very recent paper by Weiss & Ziegler (Journ. N. Y. Ent. Soc., vol. 35, pp. 231-239) but unfortunately Coates' Memoir of Say was not before them and Ord's statements which they adopt, of Say's supposed handicaps in education and literary style seem a matter of personal taste, inconsistent with the known utility of Say's writings. According to this paper (probably adopted from Ord) Maclure and Say remained at New Harmony until 1828 when the former went to Mexico leaving his interests in the latter's charge but this disagrees with the above evidence that they spent the winter of 1827-8 in Mexico. Coates and Ord differ in many points, the latter, for instance, inferring that Say remained quietly at New Harmony after his departure from Philadelphia in 1825, while the former describes Say's appearance during a visit to Philadelphia some months before his death. Ord states that as a mark of respect Say was subsequently called one of the founders of the Academy while Coates publishes minutes of meetings showing Say to be one of the original group mentioned in, and signing the first resolution although unable to attend the first meeting.

ENTOMOLOGICAL NEWS

PHILADELPHIA, PA., JANUARY, 1928.

The Labeling of Plates.

The editor of the NEWS read with joy the following passages written by C. T. Hurst, published in *Science* for July 8, 1927, page 38:

Not very long ago a very excellent paper of considerable length and illustrated by well-drawn figures in a half dozen or more plates came to me. This paper was a zoological thesis from one of the major universities of the country. As it happened to be along a line of especial interest to the writer, it was read with care. But the ease of reading and the degree of pleasure and profit enjoyed were seriously marred by the fact that the figures on the various plates were labeled with abbreviations and that one had to turn to a distant page to find the key to these abbreviations. It would have been bad enough had the key been on the page facing the plate, or at the bottom of the plate itself. Often, to make such a bad matter worse, the terms were not alphabetically arranged—they may even be omitted by error in some cases. Needless to say, a study of such plates involves a great deal of time, patience, labor and even temper. In many instances, unless such papers are of immediate interest, they go unread insofar as a careful examination of the plates is concerned.

In the plates above mentioned, it was noticed that there would have been plenty of room to spell the labels out in full directly on the face of the plates, thus doing away with the necessity for a key, and at the same time effecting a saving of time and labor in the ultimate consumption. The artistic qualities of the drawings would not suffer in the least by such a procedure; on the other hand, accuracy and availability would be greatly enhanced.

The present system of indirect labeling of plates is archaic and absolutely unscientific. It should be changed to a system of direct labeling on the figures, together with any necessary explanatory matter (not a key) on the page *facing* the plate. Direct labeling can be easily carried out in all cases except possibly in those rare instances where the details are exceptionally small and numerous. In such cases the key should face the plate and it should be arranged in an alphabetical fashion.

Contributors to the NEWS take warning!

Personals.

Dr. FRANK E. BLAISDELL, of San Francisco, has retired from his medical teaching, after 27 years of continuous attention to anatomy and pathology. He is planning to spend some months in travel in the East next year.

Prof. J. G. NEEDHAM wrote from Peking, China, on October 16, 1927: "I went dragonfly collecting in the valley beyond this pagoda [Marble Pagoda at Yü Ch'üen Shan] today. Only *Sympetrum* and *Anax* still flying. Having an interesting time over here. All well. All peaceful in Peking."

Mr. SAMUEL HENSHAW's recent resignation of the directorship of the Museum of Comparative Zoology at Harvard University was referred to in *Science* for November 11, 1927. He was director for fifteen years; previous thereto he was assistant entomologist and curator of insects for eighteen years, succeeding Dr. H. A. Hagen, to whom he was assistant for two years. He took charge of the Museum at a very critical time in its history. During his directorship the collections have greatly increased, especially in reptiles, birds and insects. Entomologists gratefully recall his *List of the Colcoptera of North America* and Supplements thereto, his lists of synopses of genera of Coleoptera, the first four parts of the Bibliography of Economic Entomology, his bibliographies of Le Conte, Horn and Packard, his list of the Hemiptera described by Uhler, his generous aid to various zoological and entomological undertakings and wish him many years of health and happiness.

Impressions of the Tring Museum, England.

We sail for India and Siam October 28. The other day I went to see the Rothschild Museum at Tring and was shown over by Dr. Karl Jordan. The beauty of the collections surpasses anything you could well imagine and the long series of all sorts of interesting Lepidoptera amazed me. All the collections are well cared for in a fine large building in cabinets of the latest and best types and you could not find a more delightful place to work. But, alas! they don't go in for Hymenoptera. I also saw the vast collection of fleas and Dr. Jordan's great series of Anthribidae, some of them resembling Longicorns. T. D. A. COCKERELL.

Gold Mines of the Naturalist in Nicaragua.

Managua, Nicaragua, Dec. 2.—(AP)—Chontales Mines Company, Ltd., owning gold mines in the Department of Chontales which it has worked for many years, to-day went into voluntary liquidation.—Philadelphia *Public Ledger*, Dec. 3, 1927.

We reached Pavon, one of the mines of the Chontales Com-

pany, and passing the Javali mine soon arrived at Santo Domingo, the headquarters of the gold-mining company whose operations I had come out to superintend. [Feb. 23?, 1868] . . . . I finally left the mines September 6, 1872, on my way to England.—THOMAS BELT, *The Naturalist in Nicaragua, A Narrative of a residence at the Gold Mines of Chontales* . . . London, 2nd edition, 1888, pp. 60, 385.

The Clark Collection of Lepidoptera.

The Boston Society's collection of moths and butterflies has been greatly enriched by the addition of the collection of the late Howard Lee Clark, not only in the number of species but by large series showing variations. As a member of the Society he took a great interest in the New England collection and frequently contributed new and interesting species. It was undoubtedly Mr. Clark's personal concern in the building up of the Society's collection that induced Mrs. Clark to present his valuable collection to the Society.

Mr. Clark was born May 25, 1857, and died November 3, 1926. He was long interested in the study of the Lepidoptera, some of the specimens having been collected as early as 1884. The greater part of the collection, however, was made by Mr. Clark between 1912 and 1919 on his beautiful place in the northern part of Bristol, Rhode Island, at the mouth of Warren River. He called his place "North Farm", and here he bred many interesting species and studied their life histories. From his trap light he selected the rarer species and only perfect specimens of the common forms. These he mounted and spread with the greatest care, which accounts for the unusually large number in such perfect condition.

The collection contains about 1100 species represented by over 7200 specimens. The largest group is the family Noctuidae, comprising 586 species and 4136 specimens. The finest series of these is that of the genus *Catocala* (the beautiful "underwings") with 102 species and 898 specimens. Mr. Clark bred many of these and described the life history of *Catocala relicta* (Can. Entom., vol. 20, p. 17-20, 1888). A series of 50 *Catocala relicta*, 20 *C. cara*, 25 *C. amatrix*, 30 *C. ultronia*, 20 *C. ilia*, 50 *C. gracilis*, 20 *Allotria elonympha*, and 24 *Euparthenos nubilis*, showing all gradations between the lighter and darker forms, constitutes a very handsome and instructive exhibit. Among many rare species there is a good specimen of *Catocala herodias*. There is also a large series of *Zale* and other "similar-winged noctuids". A *Thysania zenobia* taken at Providence, Rhode Island, is the second New England record for this southern species. Of the Geometridae there are 246 species and 839 specimens, a number of which are new to the collection. The Notodontidae are represented by 44 species and 344

specimens. There are but few Microlepidoptera, but among these are some interesting southern forms, such as the Pickle and Melon Moths, *Diophania nitidalis* and *D. hyalinata*, and the beautiful *Atteva punctella*, all taken in Rhode Island. Of the Arctiidae or tiger-moths there are 61 species and 451 specimens. There is an exceedingly beautiful series of the large Saturnoidea, 25 species and 211 specimens. These include such moths as the Luna, Polyphemus, Cecropia, Io, etc. The Sphingidae or hawk-moths, represented by 42 species and 242 specimens, are exceptionally fine, a number of the more southern species being represented. The butterflies number 107 species and 624 specimens. While the series of the genus *Papilio* are especially good, Mr. Clark was not as enthusiastic over them as he was over the moths, and large series showing variation are wanting.

With this addition the Society's collection of New England Microlepidoptera becomes almost complete. The large series make it a particularly valuable study collection.

C. W. J. (in Bul. Boston Soc. N. H., No. 45, p. 5-6.)

Assembly of Ground-Beetles (Coleop.: Carabidae).

On November 6th, 1927, while collecting in this locality for Carabidae with Mr. G. E. Hudson, a student of this College, I turned over a stone not more than a foot in diameter, and beneath it found 31 Carabids, representing six species as follows:—

Dicaelus elongatus .....24 specimens, about equal as to sexes.
Dicaelus ovalis ..... 2, both females.
Galerita janus ..... 1 male.
Chlaenius laticollis ..... 2.
Chlaenius nemoralis .... 1.
Chlaenius aestivus ..... 1.

No copulation or attempts thereat were in progress, nor was there any visible food or other attraction. It is not uncommon to find several specimens of Galerita or Chlaenius under one covering object, but I do not remember ever to have seen any species of Dicaelus thus congregated, certainly not in such numbers. Three of the *elongatus* departed from the normal in having 3 setae on right-hand margin of the thorax in front of the middle whereas the normal number is two. The *ovalis* were both typical with one such seta.

On that day in about 2½ hours, we secured 29 species of Carabidae, and yet lacked many which are surely present at this season.

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List of the Titles of Periodicals and Serials Referred to by Numbers in Entomological Literature in Entomological News.

1. Transactions of The American Entomological Society. Philadelphia.
2. Entomologische Blätter, red. v. H. Eckstein etc. Berlin.
3. Annals of the Carnegie Museum. Pittsburgh, Pa.
4. Canadian Entomologist. London, Canada.
5. Pysche, A Journal of Entomology. Boston, Mass.
6. Journal of the New York Entomological Society. New York.
7. Annals of the Entomological Society of America. Columbus, Ohio.
8. Entomologists' Monthly Magazine. London.
9. The Entomologist. London.
10. Proceedings of the Ent. Soc. of Washington. Washington, D. C.
11. Deutsche entomologische Zeitschrift. Berlin.
12. Journal of Economic Entomology. Concord, N. H.
13. Journal of Entomology and Zoology. Claremont, Cal.
14. Entomologische Zeitschrift. Frankfurt a. M., Germany.
15. Natural History, American Museum of Natural History. New York.
16. American Journal of Science. New Haven, Conn.
17. Entomologische Rundschau. Stuttgart, Germany.
18. Internationale entomologische Zeitschrift. Guben, Germany.
19. Bulletin of the Brooklyn Entomological Society. Brooklyn, N. Y.
20. Societas entomologica. Stuttgart, Germany.
21. The Entomologists' Record and Journal of Variation. London.
22. Bulletin of Entomological Research. London.
23. Bollettino del Laboratorio di Zoologia generale e agraria della R. Scuola superiore d'Agricultura in Portici. Italy.
24. Annales de la société entomologique de France. Paris.
25. Bulletin de la société entomologique de France. Paris.
26. Entomologischer Anzeiger, hersg. Adolf Hoffmann. Wien, Austria.
27. Bolletino della Società Entomologica. Genova, Italy.
28. Ent. Tidskrift utgifen af Ent. Föreningen i Stockholm. Sweden.
29. Annual Report of the Ent. Society of Ontario. Toronto, Canada.
30. The Maine Naturalist. Thornaston, Maine.
31. Nature. London.
32. Boletim do Museu Nacional do Rio de Janiero. Brazil.
33. Bull. et Annales de la Société entomologique de Belgique. Bruxelles.
34. Zoologischer Anzeiger, hrsg. v. E. Korschelt. Leipzig.
35. The Annals of Applied Biology. Cambridge, England.
36. Transactions of the Entomological Society of London. England.
37. Proceedings of the Hawaiian Entomological Society. Honolulu.
38. Bull. of the Southern California Academy of Sciences. Los Angeles.
39. The Florida Entomologist. Gainesville, Fla.
40. American Museum Novitates. New York.
41. Mitteilungen der schweiz. ent. Gesellschaft. Schaffhausen, Switzerland.
42. The Journal of Experimental Zoology. Philadelphia.
43. Ohio Journal of Sciences. Columbus, Ohio.
44. Revista chileña de historia natural. Valparaiso, Chile.
45. Zeitschrift für wissenschaftliche Insektenbiologie. Berlin.
46. Zeitschrift für Morphologie und Ökologie der Tiere. Berlin.
47. Journal of Agricultural Research. Washington, D. C.
48. Wiener entomologische Zeitung. Wien, Austria.
49. Entomologische Mitteilungen. Berlin.
50. Proceedings of the U. S. National Museum. Washington, D. C.
51. Notulae entomologicae, ed. Soc. ent. helsingfors. Helsingfors, Finland.
52. Archiv für Naturgeschichte, hrsg. v. E. Strand. Berlin.

53. Quarterly Journal of Microscopical Science. London.
54. Annales de Parasitologie Humaine et Compareé. Paris.
55. Pan-Pacific Entomologist. San Francisco, Cal.
56. "Konowia". Zeit. für systematische Insektenkunde. Wien, Austria.
57. La Feuille des Naturalistes. Paris.
58. Entomologische Berichten. Nederlandsche ent. Ver. Amsterdam.
59. Encyclopédie entomologique, ed. P. Lechevalier. Paris.
60. Stettiner entomologische Zeitung. Stettin, Germany.
61. Proceedings of the California Academy of Sciences. San Francisco.
62. Bulletin of the American Museum of Natural History. New York.
63. Deutsche entomologische Zeitschrift "Iris". Berlin.
64. Zeitschrift des österr. entomologen-Vereines. Wien.
65. Zeitschrift für angewandte Entomologie, hrsg. K. Escherich. Berlin.
66. Report of the Proceedings of the Entomological Meeting. Pusa, India.
67. University of California Publications, Entomology. Berkeley, Cal.
68. Science. New York.
69. Comptes rendus hebdoma. des séances de l'Académie des sciences. Paris.
70. Entomologica Americana. Brooklyn Entomological Society. Brooklyn.
71. Novitates Zoologicae. Tring, England.
72. Revue russe d'Entomologie. Leningrad, USSR.
73. Quarterly Review of Biology. Baltimore, Maryland.
74. Sbornik entomolog. národniho musea v Praze. Prague, Czechoslavokia.
75. Annals and Magazine of Natural History. London.
76. The Scientific Monthly. New York.
77. Comptes rendus heb. des séances et mémo. de la soc. de biologie. Paris.
78. Bulletin Biologique de la France et de la Belgique. Paris.
79. Koleopterologische Rundschau. Wien.
80. Lepidopterologische Rundschau, hrsg. Adolf Hoffmann. Wien.
81. Folia myrmecol. et termitol. hrsg. Anton Krausse. Bernau bei Berlin.
82. Bulletin, Division of the Natural History Survey. Urbana, Illinois.
83. Arkiv för zoologie, K. Svenska Vetenskapsakademien i. Stockholm.
84. Ecology. Brooklyn.
85. Genetics. Princeton, New Jersey.
86. Zoologica, New York Zoological Society. New York.
87. Archiv für Entwicklungs mechanik der Organ., hrsg. v. Roux. Leipzig.
88. Die Naturwissenschaften, hrsg. A. Berliner. Berlin.
89. Zoologische Jahrbücher, hrsg. v. Spengel. Jena, Germany.
90. The American Naturalist. Garrison-on-Hudson, New York.
91. Journal of the Washington Academy of Sciences. Washington, D. C.
92. Biological Bulletin. Wood's Hole, Massachusetts.
93. Proceedings of the Zoological Society of London. England.
94. Zeitschrift für wissenschaftliche Zoologie. Leipzig.
95. Proceedings of the Biological Soc. of Washington, Washington, D. C.
96. La Cellule. Lierre, Belgium.
97. Biologisches Zentralblatt. Leipzig.
98. Le Naturaliste Canadien. Cap Rouge. Chicoutimi, Quebec.
99. Mélanges exotico-entomologiques, Par Maurice Pic. Moulins, France.

Entomological Literature

COMPILED WITH THE ASSISTANCE OF BIOLOGICAL ABSTRACTS UNDER THE SUPERVISION OF E. T. CRESSON, JR.

Under the above head it is intended to note papers received at the Academy of Natural Sciences, of Philadelphia, pertaining to the Entomology of the Americas (North and South), including Arachnida and Myriopoda. Articles irrelevant to American entomology will not be noted; but contributions to anatomy, physiology and embryology of insects, however, whether relating to American or exotic species will be recorded.

The numbers **within brackets** [ ] refer to the journals, as numbered in the list of Periodicals and Serials published in the January and June numbers (or which may be secured from the publisher of Entomological News for 10c), in which the paper appeared. The number of volume **(in bold face)**, and in some cases the part, heft, &c. **within ( )**, follows; then the pagination follows the colon :

All continued papers, with few exceptions, are recorded only at their first installments.

*Papers containing new forms or names have an * preceding the author's name.

(S) Papers pertaining exclusively to neotropical species, and not so indicated in the title, have the symbol (S) at the end of the title of the paper.

For records of Economic Literature, see the Experiment Station Record, Office of Experiment Stations, Washington. Also Review of Applied Entomology, Series A, London. For records of papers on Medical Entomology, see Review of Applied Entomology, Series B.

☞*Note the change in the method of citing the bibliographical references, as explained above.*

Papers published in the Entomological News are not listed.

GENERAL.—Blair, K. G.—Insect remains from oil sand in Trinidad. [36] **75**: 137-142. **Cain, B. C.**—Interesting boy scouts in Entomology [12] **20**: 679-681. **Crampton, G. C.**—Eugereon and the ancestry of the Hemiptera, Psocids and Hymenoptera. [19] **22**: 1-13. **Giglio-Tos, E.**—Obituary and bibliography. [34] **5**: 35-37, ill. **Hardy, G. A.**—Report on a collecting trip to Garibaldi Park, B. C. [Rep. Prov. Mus. N. H., B. C.] **1926**: 15-32, ill. **Heikertinger, F.**—Mimikry, Schutzfärbung und sonstige Trachtanpassungen bei Insekten. [45] **22**: 212-218, cont. **Holdhaus, K.**—Die geographische Verbreitung der Insekten (Fortz.). [Schröder: Handb. d. Ent.,] **2**: 771-914. **Howard, L. O.**—The parasite element of natural control of injurious insects and its control by man. [Smith. Rep.] **1926**: 411-420. **Ives, J. D.**—Cave fauna with especial reference to ecological factors. [J. El. Mitchel Soc.] **43**: 84-90. **Lutz, F. E.**—Wind and the direction of insect flight. [40] No. 291: 4 pp. ill. **Peairs, L. M.**—Some phases of the relation of temperature to the development of insects. [Abs. of Theses, Univ. Chicago] (Sci Ser.) **3**: 309-313. **Richards, O. W.**—Sexual selection and allied problems in the insects. [Biol. Rev. Cambr., Engl.] **2**: 298-364, ill. **Rüschkamp, F.**—Systematik und Stammesgeschichte. [49] **16**: 420-422. **Smith, H. S.**—California's interest in the insects of Australia and New Zealand. [55] **4**: 36-37. **Verity, R.**—On the use of names in the study of Variation. [21] **39**: 144-147. **Weiss &**

Ziegler.—The communism of Thomas Say. [6] **35**: 231-239.

ANATOMY, PHYSIOLOGY, ETC.—Bridges, C. B.—Constriction in the chromosomes of D. melanogaster. [97] **47**: 600-603, ill. **Katsuki, K.**—Untersuchungen über erblichen Gynandromorphismus und somatische Mosaikbildungen bei Bombyx mori. [89] **44** (Allg. Zool.): 1-84, ill. **King, R. L.**—Origin and description of bristles in D. melanogaster. [92] **53**: 465-468. **Pauli, M. E.**—Die Entwicklung geschnürter und centrifugierter Eier von Calliphora erythrocephala und Musca domestica. [94] **129**: 483-540, ill. **Townsend, C. H. T.**—On the Cephenemyia mechanism and the daylight-day circuit of the earth by flight. [6] **35**: 245-252. **Wettinger, O.**—Das circulationssystem der Tipulidenlarven mit besonderer Berücksichtigung von Tipula selene. [94] **129**: 453-482, ill.

ARACHNIDA AND MYRIOPODA.—Taylor, L.—Notes on the mite Pediculoides ventricosus Newport. [5] **34**: 157-163. **1 fig.**

THE SMALLER ORDERS OF INSECTA.—*Anonymous.—New Thysanoptera from Florida. [39] **11**: 26. ***Byers, C. F.**—Key to the North American species of Enallagma, with a description of a new species. [1] **53**: 249-260. **3 fig. Crampton, G. C.**—(See under General). **Light, S. F.**—A new and more exact method of expressing important specific characters of Termites. [67] **4**: 75-88, ill. ***Moulton, D.**—Four new California Thysanoptera with notes on two other species. [55] **4**: 30-35. ***Moulton, D.**—Thysanoptera, new species and notes. [19] **22**: 181-201, ill. **Needham and Broughton.**—The venation of the Libellulinae. [1] **53**: 157-190. **4 fig. *Watson, J. R.**—The Thysanopteron fauna of the Indian Pipe. [39] **11**: 27-30.

ORTHOPTERA.—Britton, W.—The grasshopper plague of 1866 in Kansas. [Sci. Month.] **1927**: 540-545. **Hadden, F. C.**—A list of insects eaten by the Mantis. [37] **6**: 385-386. **Hingston, R. W. G.**—The liquid-squirting habit of oriental grasshoppers. [36] **75** (1): 65-68. **1 pl. Lutz, F. E.**—A much-abused but still cheerful cricket. [6] **35**: 307-308. ***Rehn, J. A. G.**—On new and certain previously-known American genera of the Acridinae, with specific comments and descriptions. [1] **53**: 213-240. **1 pl. 1 map.**

HEMIPTERA.—*Ball, E. D.—The genus Clastoptera in the Americas south of the United States. [19] **22**: 222-

225. **Carter, W.**—Extensions of the known range of Eutettix tenellus Baker and curly-top of sugar beets. [12] **20**: 714-717. **Crampton, G. C.**—(See under General.) **Hungerford, H. B.**—Arctocorixa atopodonta, new name for Arctocorixa dubia Abbott. [19] **22**: 35. ***Hussey, R. F.**—On some American Pyrrhocoridae. (S) [19] **22**: 227-235, ill. **Johnston, H. G.**—Esperanza texana Barber found in Louisiana. (Coreidae). [19] **22**: 221. ***Knight, H. H.**—A new Semium from Arizona and Colorado. (Miridae). [19] **22**: 26-27. ***Lallemand, V.**—Descriptions de Cercopides nouveaux provenant de la collection du British Museum. [36] **75**: 99-118. **Painter, R. H.**—Some notes on the oviposition habits of the tarnished plant bug, Lygus pratensis Linn, with a list of host plants. [29] **1926**: 44-46. 2 fig. **Stepanek, O.**—Beiträge zur heteropterologischen Teratologie. [45] **22**: 198-203, ill. **Van Duzee, E. P.**—On the standing of genus Tibicen Latr. [55] **4**: 47.

LEPIDOPTERA.—Riley, N. D.—The Oberthür collection. [9] **60**: 136-138. **Riley, N. D.**—Exit Huebner's "Tentamen". [9] **60**: 260. **Roth, H.**—Schmetterlingspreise. [17] **44**: 31. **Rudolfs, W.**—Studies on chemical changes during the life cycle of the tent caterpillar (Malacosoma americana Fab.). [6] **35**: 219-229, ill. **Rummel, C.**—Notes on aberrations of New Jersey butterflies. [19] **22**: 15, ill., cont. **Seitz, A.**—Das system der Schmetterlinge. III. Die Danaiden. [17] **44**: 32, 35-36, cont. **Seitz, A.**—Itatiaya. [17] **44**: 29-31, 33-35, cont. **Philpott, A.**—The male genitalia of the Hepialidae. [36] **75** (1): 35-41. **3 pl. Provancher et Huard.**—Faune entomologique de la Province de Québec. Argynnis. [Nat. Can.] **54**: 113-118, cont. ***Williams, R. C.**—Studies in the Neotropical Hesperioidea. Paper 2. [1] **53**: 261-292. 2 col. pl. **34** fig. **Müller & Schuster von Forstner.**—Die Kerbtierwelt der Insel Seymour. Neue entomologische Erforschung der Galapagosinseln durch Beebe. Spinngewebe als vogelnetze? [20] **42**: 21-24. ill. **Myers, M. A.**—Observations on the habits and life history of the moth, Lophoptilus eloisella. [6] **35**: 241-244. **Nakahara, W.**—Remarks on genitalic characters of some Papilios of the machaon-group. [19] **22**: 220. **Johnson, C. W.**—Notes on the present distribution of two introduced moths. [5] **34**: 176-177. **Learned, E. T.**—A study of the male abdominal appendages of the Nais-group of Apantesis Walker. (Arctiidae). [5] **34**: 135-145. **2 pl. LeCerf, F.**—Sur la validité de certains termes génériques attribués

a Linné. [59] (B), Lep. **2**: 153-167. **Hudson & Wood.**—Some preliminary observation on the life history of the armyworm Cirphis unipuncta. [29] **1926**: 22-24. **Englehardt, G. P.**—A collection of inflated caterpillars. [19] **22**: 212. **Eltringham, H.**—On the brush organs in the Noctuid moth Laphygma frugiperda. [36] **75**: 143-146, ill. **Dohanian, S. M.**—Preliminary experiments for the control of certain European vine-moths by fumigating with cyanogas calcium cyanide. [5] **34**: 146-156. ***Dyar, H. G.**—Ten new Lepidoptera from Mexico. [55] **4**: 7-10. 1927. **Ball, F. J.**—Practical Hints for the Examination of the Androconia. [9] **60**: 125-126. **Barnes and Benjamin.**—On the identity of the Asthena lucata Gn. (Geometridae). [55] **4**: 6. **Barnes and Benjamin.**—On the identity of Choerodes incurvata Gn. [55] **4**: 10. **Barnes and Benjamin.**—On the identity of Acidalia balistaria Gn. [55] **4**: 17. **Barnes and Benjamin.**—On the placement of "Ogdoconta" carnecla Sm. [55] **4**: 18. **Barnes and Benjamin.**—On the identity of Micra recta Gn. [55] **4**: 39. ***Barnes and Benjamin.**—Notes on two species of the genus Olene. (Liparidae). [19] **22**: 226. **Barnes and Benjamin.**—New Phalaenidae. [55] **4**: 4-6. **Barnes and Benjamin.**—Synonymic notes. (Phalaenidae). [55] **4**: 1-3. ***Bell, E. L.**—Description of a new Thorybes. (Hesperiidae). [19] **22**: 217-218. ***Bell, E. L.**—Description of a new Amblyscirtes from Texas. (Hesperiidae). [19] **22**: 203-204. ***Bell, E. L.**—Description of a new species of Erynnis (Thanaos Auct.). [6] **35**: 261-263. **Clark, A. H.**—Fragrant butterflies. [Smith. Rep.] **1926**: 421-446, ill. **Cockayne, E. A.**—Extra wings in Lepidoptera. [36] **75**: 163-176. 2 pl. **Crumb, S. E.**—The army worms (Key to larvae). [19] **22**: 41-55, ill.

DIPTERA.—Aldrich, J. M.—Notes on muscoid synonymy. [19] **22**: 18-25. ***Alexander, C. P.**—Undescribed crane-flies from the Holarctic region in the U. S. National Museum. [50] **72**, Art. 2; 17 pp. ill. **Alexander, C. P.**—Undescribed species of the genus Limnophila from eastern North America. (Tipulidae). [19], **22**: 56-64, ill. ***Alexander, C. P.**—Records and descriptions of Neotropical crane-flies (S). [6] **35**: 265-278. ***Borgmeier, T.**—Eine neue ecitophile Phoridengattung aus Brasilien. [49] **16**: 411-414, ill. **Cole, F. R.**—Note on Western bulb flies. [55] **4**: 29. **da Costa Lima, A.**—Sur la respiration des larves d'Anopheles albimanus. [77] **97**: 1092-1093. ***Curran, C. H.**—A new tachinid parasitic on armyworms in Mexico.

[37] 6: 497-498. **Hoffman, W. A.**—A container for field collection of mosquito larvae. [68] 65: 485, ill. **Jordan, D. S.**—The mosquito fish (Gambusia) and its relation to malaria. [Smith. Rep.] 1926: 301-308, ill. **Learned, E. T.**—Note on leaf-oviposition of Zenillia futilis (Tachinidae). [19] 22: 219. **Mitchener, A. V.**—The current fruit fly, Epochra canadensis Loew, in Manitoba. (Trypetidae). [29] 1926: 38-41, ill. **Sinton & Covell.**—The relation of the morphology of the buccal cavity to the classification of anopheline mosquitoes. [Indian Jour. Med. Res.] 15: 301-308, ill. **Speed, R. J.**—Notes on the biology and immature stages of Geranomyia. [39] 11: 17-26. 7 fig. **Swezey, O. H.**—Notes on the Mexican Tachinid, Archytas cirphis Curran, introduced into Hawaii as an armyworm parasite. [37] 6: 499-503. **Thorpe, W. H.**—The larvae and pupae of the genus Hyperechia (Asilidae). [36] 75: 177-185, ill. **Wright, W. K.**—On the effects of exposure to raised temperatures upon the larvae of certain British mosquitoes. [22] 18: 91-94.

COLEOPTERA.—Benedict, W.—Two interesting beetles from Carlsbad Cavern. [55] 4: 44-46. **Boucomont et Gillet.**—Scarabaeidae: Coprinae. II, Termotraginae. In: Coleopterorum Catalogus Part 90: 103-264. **Brannon, C. H.**—Life history of the plum curculio (Conotrachelus nenuphar). [J. Elisha Mit. Soc.] 43: 79-83, ill. ***Buchanan, L. L.**—A short review of Notaris (Curculionidae). [19] 22: 36-39, ill. ***Chapin, E.**—The North American species of Ptilodactyla. [1] 53: 241-247 1 pl. **Csiki, E.**—Carabidae: Carabinae. 1. In: Coleopterorum Catalogus Part 91: 1-313. **Darlington, P. J., Jr.**—Helophorus aquaticus L. in America. [5] 34: 174-175. **Englehardt, G. P.**—Popillia japonica in Long Island. [19] 22: 218. ***Fall, H. C.**—New Lampyridae. [19] 22: 208-211. **Hardy, G. A.**—Buprestidae of Vancouver Island. [Rep. Prov. Mus. N. H., B. C.] 1926: 32-37, ill. **Hatch, M. H.**—Notes on the biology of Dineutus. (Gyrinidae). [19] 22: 27-28. ***Grouvelle, A.**—Contribution a l'etude des Notiophygus. (S). [59] (B.I) 2: 97-147. **Hatch, H.**—A systematic index to the keys for the determination of the Nearctic Coleoptera. [6] 35: 279-306. **Hatch, M. H.**—Note on the varieties of Crioceris asparagi L. [19] 22: 211. **Hutchings, C. B.**—A study of Balaninus obtusus Blanchard; or, a life history in a Hazel nutshell. [29] 1926: 9-12, ill. **Kleine, R.**—Brenthidae. In: Coleopterorum Catalogus Part 89 : 1-94. ***Pic, M.**—Coléoptères du globe. [99] 50: 36 pp. **Salt, G.**—

Notes on the Strepsiptera and their hymenopterous hosts. [5] **34**: 182-192. ***Schaeffer, C.**—On a few new and known Melolonthine Scarabaeidae. [19] **22**: 213-216. ***Van Dyke, C.**—New species of North American Rhynchophora. [55] **4**: 11-17. ***Wolcott, A. B.**—Descriptions of a new genus and four new species of American Cleridae. [Col. Cont.] **1**: 105-110. **Williams, F. X.**—Euparagia scutellaris Cresson, a Masarid wasp that stores its cells with the young of a Curculionid beetle. [55] **4**: 38-39. **Wilson, J. W.**—The male genital tube of some of the species of the genus Scymnus (Coccinellidae). [5] **34**: 167-170. 1 pl. **Winters, F. C.**—Key to the subtribe Helocharse Orchym. of Boreal America. [55] **4**: 19.

HYMENOPTERA.—***Brèthes, J.**—Hyménoptères Sud-Américains du Deutsches Entomologisches Institut: Terebrantia. [49] **16**: 319-335, ill. **Chorine, V.**—Sur l'immunisation des chenilles de la mite des Abeilles (Galleria mellonella). [77] **97**: 1288-1290. ***Cockerell, T. D. A.**—Two new types of desert bees. [55] **4**: 41-44. **Crampton, G. C.**—(See under General.) ***Cushman, R. A.**—Miscellaneous notes and descriptions of ichneumon-flies. [50] **72**, Art. 13: *22* pp. **Driggers, B. F.**—Galls on stems of cultivated blueberry caused by a Chalcidoid, Hemadas nubilipennis Ashm. [6] **35**: 253-259. ***Gahan, A. B.**—Description of a new Eulophid parasitic on Bucculatrix canadensisella Chambers. [5] **34**: 171-173. ***Fenton, F. A.**—New parasitic Hymenoptera of the subfamily Anteoninae from the Americas. [50] **72**, Art. 8, 16 pp. ill. ***Menozzi, C.**—Formiche raccolte dal Sig. H. Schmidt nei dintorni di San José di Costa Rica (Formicidae). [49] **16**: 336-345, ill. ***Mitchell, T. B.**—Notes on the Megachilidae. [5] **34**: 178-181. ***Taylor, R. L.**—A new species of parasitic Hymenoptera. (Eupelmidae). [19] **22**: 205-207, ill. **Wheeler, W. M.**—The occurrence of the pavement ant (Tetramorium caespitum L.) in Boston. [5] **34**: 164-165. **Whiting, A. R.**—Genetic evidence for diploid males in Habrobracon. [92] **53**: 438-449. **Weber, H.**—Die Gliederung der Sternalregion des Tenthredinidenthorax. [45] **22**: 161-198, ill.

SPECIAL NOTICES.

Die Hydracarinen Schwedens.—Beitrag zur Systematik, Embryologie, Oekologie, und Verbreitungsgeschichte der schwedischen Arten. Von O. Lundblad. [Zool. Bidrag, Uppsala] 11: 185-540, ill. This monographic treatise will probably be interesting to American students of this Order.

When books appear they are always "much needed", but this term was never more truthfully applied in my opinion than now for KINGSBURY AND JOHANNSEN'S "HISTOLOGICAL TECHNIQUE" recently issued by John Wiley and Sons, Inc., New York City viii. pp. 1-131, 16 figs, 1927.

I may be but one of few instead of many, who has floundered somewhat in the complex preparation of stained insect and other animal tissue in order to differentiate cytoplasm and its inclusions. Methods of fixation, dehydration and staining are legion in the numerous periodicals, but they are often insufficiently described and inadequately tested, besides being widely scattered in the literature. In Kingsbury and Johannsen's volume there is now compiled as complete a set of directions for both general and specialized histologic technique as could be desired by the beginner and more advanced worker. It doubtless contains the tested and successfully demonstrated technique of Kingsbury's earlier "Laboratory directions in histology" based on years of contact with advanced students in animal histology, and the extensive experience of Johannsen in insect morphology and histology.

At first glance the insect histologist might wish that the volume were devoted to the preparation of insect tissues alone, or he might wish that it had been practicable to concentrate the technique upon the Arthropoda in several chapters rather than find it largely in one chapter on "Special methods for various animal forms" and in scattered paragraphs throughout the volume; but a working knowledge of what the volume contains would probably soon obviate any difficulty in finding just which fixers, methods, or stains are suitable for emphasizing certain insect tissues.

In making histologic preparations, what are good directions for some are inadequate for others. This is because one who presents his schema for fixation and staining, omits detailed steps in procedure which he thinks any worker in histology should know. In reality the worker doesn't know, because he is not working under similar conditions or with the same equipment. Consequently perfection in histologic technique becomes rather a matter of trial and experience. But it will be found decidedly advantageous to have this volume of Doctors Kingsbury and Johannsen handy for the correction of errors in technique from their unusually complete directions, and to use it as a basis for broadening one's histologic training into the later and more specific methods of differentiating cell structures.

R. W. LEIBY.

OBITUARY.

The death of FREDERICK LEONARD WASHBURN, professor of economic vertebrate zoology at the University of Minnesota from 1918 to 1926, which occurred on October 15, 1927, was announced in *Science* for October 21. He was born at Brookline, Massachusetts, April 12, 1860, son of Nehemiah and Martha (Parmalee) Washburn, received the A. B. from Harvard in 1882, and was a graduate student at Johns Hopkins and at Harvard, which latter gave him the A. M. in 1895. He was instructor of zoology at the University of Michigan 1887-88, professor of zoology at Oregon Agricultural College and entomologist at the Experiment Station 1888-1894, professor of biology at the University of Oregon 1894-1902, State biologist of Oregon 1899-1902, professor of entomology at the University of Minnesota and State entomologist of Minnesota 1902-1918. He married Frances L. Wilcox of Minneapolis, December 27, 1887, and had two daughters, both of whom married.

In addition to his official reports as State Entomologist of Minnesota, he published, in 1918, a book entitled *Injurious Insects and Useful Birds* (Lippincott, Philadelphia and London), which was reviewed in the NEWS for February, 1919 (p. 54). His most recent contribution to this journal appears to be a brief note on the cotton worm moth, *Alabama argillacea*, in Minnesota in 1914, published in our number for May, 1915 (p. 207).

The death on October 22, 1927, after a short illness, of Dr. ANTONIO BERLESE, director of the R. Stazione di Entomologia Agraria, at Florence, Italy, is announced. He was the author of the well-known text-book, *Gli Insetti, loro organizzazione, sviluppo, abitudini e rapporti coll'uomo*, in two large volumes (Milan, 1909 and later). His contributions to entomology include studies on the Italian Coccidae, 1893-95, a monograph of the Myrientomata (Redia, vol. 6, pp. 1-182, 17 plates, 1910), on metamorphosis (Redia, vol. 9, pp. 121-136, 1913) and cuticular sense organs; and on the phenomena of metamorphosis in metabolic insects (Revista di patologia vegetale 1897 and later).

The number of the NEWS for December, 1927, was mailed at the Philadelphia Post Office on December 14th, 1927.

CORRECTION: On title page of Volume XXXVIII, 1927, under Advisory Committee, for Max Lisliuk, Jr. read Max Kisliuk, Jr.

EXCHANGES

This column is intended only for wants and exchanges, not for advertisements of goods for sale. Notices not exceeding three lines free to subscribers.

These notices are continued as long as our limited space will allow; the new ones are added at the end of the column, and only when necessary those at the top (being longest in) are discontinued.

Wanted—Cicindelidae & Cerambycidae in exchange for local coleoptera. Address Ernest Baylis, 5011 Saul Street, Philadelphia, Pa.

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Wanted—Coleoptera. I wish to purchase correctly named Coleoptera, from North America and Canada. Please send lists. Edwin E. Calder, R. I. College of Pharmacy, 235 Benefit St., Providence, R. I.

Wanted—Names and addresses of collectors of Lepidoptera in southern states, and in all foreign countries. Collectors communicate—Mrs. Elmer Grubb, R. D. No. 1, Fredericktown, Ohio.

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Cash for Back Issue—Wanted December issue, Vol. 2, 1891, Ent. News. Name your price; or will buy complete Vol. 2. Mr. J. D. Gunder, 849 Linda Vista Ave., Pasadena, Calif.

Wanted—Living cocoons of American Silk Moths: Luna, Cecropia Polyphemus, etc. Offered: Morphos, etc., in exchange or cash. Send particulars before sending.—A. Ford, 42, Irving Road, Bournemouth, Hampshire, England.

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DIPTERA.

905.—**Bromley** (S. W.).—The genus Microstylum in Madagascar (Asilidae). (Trans., **53**, 201-207, 1927) ..... .20

HYMENOPTERA

901.—**Frison** (T. H.).—A contribution to our knowledge of the relationships of the Bremidae of America north of Mexico. (Trans., **53**, 51-78, 2 pls., 1927) ..... .60

LEPIDOPTERA.

904.—**Braun** (A. F.).—Descriptions of new microlepidoptera. (Trans., **53**, 191-199, 1927) ..... .20

910.—**Williams** (R. C., Jr.).—Studies in the neotropical Hesperioidea. Paper 2. (Trans., **53**, 261, 291, 2 col, pl., 1927)... 120

911.—**Jones** (F. M.).—The mating of the Psychidae. (Trans., **53**, 293-312 6 pls., 1927) ..... .55

ODONATA

903.—**Needham** (J. G.) **& Broughton** (E.).—The venation of the Libellulinae. (Trans., **53**, 157-190, ill., 1927) ..... .75

and descriptions. (Trans., **53**, 213-240, 1 pl., 1927) ..... .60

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